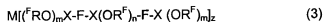


CLAIMS

1. A method for preparing salts of weakly coordinating anions of the type corresponding to the following formula (1), (2) or (3):



wherein, in a first step an organyl compound of an element XR_m is reacted with a partially or completely fluorinated alcohol FROH in an organic, aprotic solvent and then, in a second step, the resulting alkoxy compound of the element $X(OR^F)_m$ is reacted with a suitable fluoride salt M_yY_z so as to abstract a fluoride ion, if necessary under XF_m -catalysis, wherein X is selected from the group consisting of B, Al, Ga, In, P, As and Sb,

M is a monovalent or bivalent cation,

m is 3 or 5 and

n is 2, if m is 3, and/or

n is 4, if m is 5,

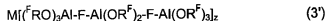
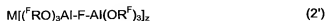
y is 1 or 2, provided that, if y is 1, Y is a monovalent anion,

or if y is 2, Y is a bivalent anion, and

z is 1 or 2, provided that, if z is 1, M is a monovalent cation,

or if z is 2, M is a bivalent cation.

2. The method according to claim 1 for the production of salts of weakly coordinating anions of the type corresponding to the following formula (1'), (2') or (3'):



wherein, in a first step an aluminum triorganyl compound AlR_m is reacted with a partially or completely fluorinated alcohol ^fROH in an organic, aprotic solvent, and then, in a second step, the resulting aluminum trialkoxy compound $\text{Al}(\text{OR}^f)_3$ is reacted with a tetrafluoroborate salt $\text{M}(\text{BF}_4)_z$, if necessary, under BF_3 -catalysis.

3. A method according to claim 1 or 2, wherein the aluminum trialkoxy compound $\text{Al}(\text{OR}^f)_3$ is reacted with the tetrafluoroborate salt $\text{M}(\text{BF}_4)_z$ at a ratio of 1:1, if z is 1, or is reacted at a ratio of 2:1, if z is 2.

4. A method according to claim 1 or 2, wherein the aluminum trialkoxy compound $\text{Al}(\text{OR}^f)_3$ is reacted with the tetrafluoroborate salt $\text{M}(\text{BF}_4)_z$ at a ratio of 2:1, if z is 1, or is reacted at a ratio of 4:1, if z is 2.

5. A method according to any one of the preceding claims, wherein the organic, aprotic solvent is selected from the group consisting of pentane, hexane, heptane, octane, benzene, toluene, cresol, chlorobenzene and trichlorobenzene.

6. A method according to any one of the preceding claims, wherein R is a radical selected from the group consisting of hydrogen, methyl, ethyl, n -propyl, i -propyl, n -butyl, i -butyl, t -butyl, phenyl and tolyl.

7. A method according to any one of the preceding claims, wherein R^f is selected from the group consisting of linear or branched, partially or completely fluorinated C_1 to C_{10} alkyl groups, partially or completely fluorinated C_6 to C_{20} aryl groups, and partially or completely fluorinated C_3 to C_{10} cycloalkyl groups.

8. A method according to any one of the preceding claims, wherein, if z is 1, M is selected from the group consisting of alkali metal ions, In^+ , Ti^+ , Ag^+ , Cu^+ , NR_4^+ , PR'_4^+ , wherein R' is, independently in each case, hydrogen, a linear or branched C_1 to C_{20} -alkyl radical or substituted or unsubstituted aryl radical, and imidazolium, or, if z is 2, M is selected from the group

consisting of Ni^{2+} , Cu^{2+} , Zn^{2+} , Pd^{2+} , Rh^{2+} , and Pt^{2+} .

9. A method according to any one of claims 1 to 8, wherein, in a first step, the aluminum triorganyl compound AlMe_3 is reacted with a partially or completely fluorinated alcohol $^{\text{F}}\text{ROH}$ in pentane at a ratio of 1:3 and then, in a second step, the resulting aluminum trialkoxy compound $\text{Al}(\text{OR}^{\text{F}})_3$ is reacted with tetrafluoroborate salt $\text{M}(\text{BF}_4)_z$ at a ratio of 1:1, if z is 1, or at a ratio of 2:1, if z is 2, to yield a compound corresponding to formula (1') above.

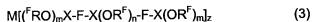
10. A method according to any one of claims 1 to 8, wherein, in a first step, the aluminum triorganyl compound AlMe_3 is reacted with a partially or completely fluorinated alcohol $^{\text{F}}\text{ROH}$ in pentane at a ratio of 1:3 and, then in a second step, the resulting aluminum trialkoxy compound $\text{Al}(\text{OR}^{\text{F}})_3$ is reacted with tetrafluoroborate salt $\text{M}(\text{BF}_4)_z$ at a ratio of 2:1, if z is 1, or at a ratio of 4:1, if z is 2, to yield a compound corresponding to formula (2') above.

11. A method according to any one of claims 1 to 8, wherein, in a first step, the aluminum triorganyl compound AlMe_3 is reacted with a partially or completely fluorinated alcohol $^{\text{F}}\text{ROH}$ in heptane at a ratio of 1:3 and then, in a second step, the resulting aluminum trialkoxy compound $\text{Al}(\text{OR}^{\text{F}})_3$ is reacted with tetrafluoroborate salt $\text{M}(\text{BF}_4)_z$ at a ratio of 2:1 if z is 1, or at a ratio of 4:1, if z is 2, to yield a compound corresponding to formula (3') above.

12. A method according to any one of claims 9 to 11, wherein R^{F} is $(\text{F}_3\text{C})_3\text{C}$.

13. A method according to any one of claims 9 to 12, wherein M is Ag^+ or NBu_4^+ .

14. Salts of weakly coordinating anions corresponding to formula (3):



wherein X is selected from the group consisting of B, Al, Ga, In, P, As and Sb,

M is a monovalent or bivalent cation,

m is 3 or 5 and

n is 2, if m is 3, and/or

n is 4, if m is 5,

z is 1 or 2, provided that, if z is 1, M is a monovalent anion,

and/or if z is 2, M is a bivalent anion, and

wherein, if z is 1, M is selected from the group consisting of alkali metal ions, In^+ , Ti^+ , Ag^+ , Cu^+ , NR_4^+ , PR_4^+ , wherein R' is, independently in each case, hydrogen, a linear or branched C_1 to C_{20} -alkyl radical or substituted or unsubstituted aryl radical, and imidazolium, or, if z is 2, M is selected from the group consisting of Ni^{2+} , Cu^{2+} , Zn^{2+} , Pd^{2+} , Rh^{2+} , and Pt^{2+} , and R^{F} is selected from the group consisting of linear or branched, partially or completely fluorinated C_1 to C_{10} alkyl groups, partially or completely fluorinated C_6 to C_{20} aryl groups, and partially or completely fluorinated C_3 to C_{10} cycloalkyl groups.

15. The salts of weakly coordinating anions according to claim 14, represented by the formula (3'):



wherein z, M and R^{F} are as defined above.

16. The salts according to claim 14 or 15, wherein M is Ag^+ or NBu_4^+ and R^{F} is $(\text{F}_3\text{C})_3\text{C}$.

17. Use of a salt according to any one of claims 14 to 16 or prepared according to the method of any one of claims 1 to 13, in ionic fluids, in lithium ion batteries, as a conducting salt in electrochemistry or in homogeneous catalysis.

18. An alkoxy compound of an element, represented by formula (4):



(4)

wherein X is selected from the group consisting of B, Al, Ga, In, P, As and Sb,

m is 3 or 5 and

R^F is selected from the group consisting of linear or branched, partially or completely fluorinated C_1 to C_{10} alkyl groups, partially or completely fluorinated C_6 to C_{20} aryl groups, and partially or completely fluorinated C_3 to C_{10} cycloalkyl groups.

19. The alkoxy compound of an element according to claim 18, wherein X is Al.